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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------------|------------------|
| 10/621,452 | 07/18/2003 | Wei-Fang Wu | 4006-259 | 1130 |
| 22429 | 7590 | 07/13/2005 | | |
| LOWE HAUPTMAN GILMAN AND BERNER, LLP 1700 DIAGONAL ROAD SUITE 300 /310 ALEXANDRIA, VA 22314 | | | EXAMINER FLANIGAN, ALLEN J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3753 | |

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------|--------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/621,452 | WU ET AL. | |
| | Examiner | Art Unit | |
| | Allen J. Flanigan | 3753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-12 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 4 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The claims recite a “drawing means”, but it is not clear what structure corresponds to this recitation. The specification refers to a drawing area within condensation chamber 304, but a means implies a particular device or structure. Also, the use of reference numbers is confusing; 304 is used to refer to a condensation chamber, a drawing area, and a fluid pipe (lines 8-10 of page 10). The reference number 320 is not identified in the specification.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

These claims recite chambers and pipes that are “integrally formed” (i.e. not formed of discrete assembled components). No disclosure is made in the specification regarding how one skilled in the art is to construct the device with

porous wicking inside in a manner that results in an integrally formed structure.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5-7, and 11, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Shlosinger.

Scholsinger shows a two-chamber heat pipe structure with the chambers connected by first and second pipes 24, 28. Note that a porous wicking structure 16, 30 is shown lining the evaporation chamber 1 and the second pipe 28. As for the recited “drawing means”, Fig. 1 appears to show simply an enlarged area of wicking material associated with the end of pipe 308; clearly the lower portion of wick 20 abutting the end of pipe 28 as it connects to the condenser chamber 22 is responsive to the claimed “drawing means” as it is clearly capable of drawing liquid refrigerant into pipe 28.

Regarding claims 3 and 11, the short vertical portion of the left end of gas pipe 24 is readable on the recited “gas channel”. Again, this short pipe

section clearly is capable of limiting a flow direction of vapor (it confines the flow to a path like any conduit).

Claims 6 and 15 recite limitations that concern the intended use of the device (the elevation of the chambers in use). Such limitations cannot distinguish an otherwise known structure. Apparatus claims cover what a device is, not what it does¹.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shlosinger in view of Staudhammer et al.

Shlosinger does not indicate a preferred material for capillary material wick 16, 30. Staudhammer et al. indicate that the most common materials employed for heat pipe capillary wicks are "woven quartz, wire mesh, and sintered metal powders and fibers" (lines 36-44 column 1). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to use any of these well known materials to form the wicks of Shlosinger.

¹ See Ex Parte Masham, 2 U.S.P.Q. 2d 1647 ; Hewlett-Packard Co. v. Bausch &

Claims 9, 10, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shlosinger in view of Grover et al.

It is well known in the art to enhance heat transfer from heated or cooled surfaces, particularly in heat pipes, by adding surface area increasing structure (fins) to the heated/cooled surfaces. Grover et al. show the attachment of fins to the evaporator and condenser sections of a heat pipe device. In view of this, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to attach fins to the evaporating and condensing chambers of Shlosinger to improve heat transfer efficiency.

Claims 4 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references of record show various heat pipe configurations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone

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number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "allen J. Flanigan". The signature is written in a cursive, flowing style.

Allen J. Flanigan
Primary Examiner
Art Unit 3753

AJF